

A SYNOPSIS OF THE SPECIES OF *ASIDINA* IN THE
UNITED STATES WITH DESCRIPTION OF A NEW
SPECIES FROM ARIZONA (COLEOPTERA:
TENEBRIONIDAE)

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ABSTRACT

The geographical variation, ecology, and distribution are discussed for the 6 species of *Asidina* known to inhabit the U. S. A key is presented for separation of the species, and *Asidina rugicollis* NEW SPECIES is described from Arizona. *Asidina teres* Casey, *A. liberta* Casey, and *A. parallela terricola* Blaisdell are all reduced to synonymy.

The genus *Asidina* was established by Casey (1912) to receive 4 known species and 2 new ones. He designated *A. parallela* (LeConte) as type, included *A. wickhami* (Horn), *A. furcata* (Champion), and *A. confluens* (LeConte), and described *A. teres* and *A. liberta*. Since then there have been few additions to the genus. Blaisdell (1923) described a new subspecies, *A. parallela terricola*, and Brown (1971) transferred *semilaevis* (Horn) from *Pelecyphorus* to *Asidina*.

The genus *Asidina* was poorly characterized by Casey, and the following emended diagnosis is offered for clarification: Mentum large, broad, separated from mandibles by a wide space exposing cardo, but closely approaching sides of buccal opening. Postgenal process short, blunt to pointed, reaching no farther than midline of mentum. Gular pedestal prominent and long, junction with mentum distinctly concave, width about two-thirds that of mentum. Ligula prominent and notched, often tumid and overlapping mentum. Apical segment of maxillary palpus enlarged, rectitriangular to acute basally in the male (Fig. 7A), generally smaller and obtuse in the female (Fig. 7B). Eyes oval to elongate oval, often weakly emarginate. Antennae slender, tenth segment enlarged and bearing a distinct spongiose area on each side of the apex, eleventh segment reduced in size and spongiose apically. Tarsi with short, spiniform hairs beneath. Anterior tibia smooth to weakly serrulate on outer surface, dorsal apical angle blunt to acute and moderately everted. Prosternal process gradually declivous behind coxa, never sharply margined. Body parallel to narrowly sub-oval, often flattened on dorsal surface, glabrous to clothed with short simple setae but never prominently hirsute. Posterior angles of pronotum inconspicuous, generally blunt, occasionally acute, rarely slightly overlapping elytra. Width of elytra at humeri sub-equal to width of pronotum at posterior angles. Elytra always with distinct, relatively smooth carinae forming the lateral borders, carinae sometimes bifurcate. Discal carinae present or absent.

Casey's original diagnosis of *Asidina* was based on only 6 specimens. This was far too small a sample to give him a good idea of the variability in the genus. Therefore some of his comments are not wholly accurate. Phylogenetically this genus is probably most closely related to the genera

Trichiasida, *Poliorcetes*, and *Stethasida*. Species of *Trichiasida* are generally more hirsute, have a convex pronotal base, and usually lack carinae on the elytra. *T. impotens* Casey and *ignava* Casey approach *Asidina* in form of pronotum and in having weak elytral carinae, but with an incomplete lateral margin which is not as sharp. *T. horrida* (Champion) and *T. impetrata* (Horn) have distinct, but coarse and tuberculate, carinae on the elytra, are evidently hirsute, and have the transverse mentum more typical of *Trichiasida*. The separation between *Trichiasida* and *Asidina* is not clearly defined. The rare *Poliorcetes* from southern Mexico is distinguished by the prosternal process forming a prominent, thick, unmargined lobe behind the coxae. *Stethasida* is also best distinguished by the prosternal process which forms a sharply margined, prominent and broad lobe behind the coxae. *Parasida*, *Notiasida*, and the *Asidopsis opaca* group superficially resemble *Asidina* but are easily distinguished by the prominent, acute, posterior angles of the pronotum which usually project back over the elytra.

KEY TO SPECIES OF *Asidina*

1. Surface of elytra with scattered granules or tubercles, and with small but visible setae; base of pronotum bisinuate; lateral margins of pronotum thin; length: 10.5 to 18.7 mm 2
- 1'. Surface of elytra smooth and glabrous; base of pronotum arcuate, truncate or trisinuate; lateral margins of pronotum thick; length: 18.5 to 26.0 mm 5
- 2(1). Disk of pronotum coarsely and densely punctured, the punctures separated by a distance subequal to their diameter or less medially, becoming larger, deeper and confluent laterally; elytra convex between marginal carinae (Fig. 1) *rugicollis* NEW SPECIES
- 2'. Disk of pronotum finely to minutely punctured, with only a few strong and widely separated punctures sometimes present inside reflexed lateral margins; elytra flattened between marginal carinae 3
- 3(2'). Discal carina attaining elytral base or nearly so and well separated from marginal carina throughout its length; marginal carina bifurcate at least one-third the distance from base (inner branch sometimes obsolete or reduced to a row of tubercles) 4
- 3'. Discal carina not attaining base of elytra, ending at least one-sixth of the elytral length from base, closely parallel to marginal carina; marginal carina never bifurcate (Fig. 2) *parallela* (LeConte)
- 4(3). Dorsum practically glabrous with only minute decumbent setae visible at high magnification; lateral margins of pronotum broadly rounded; pronotum strikingly gibbose in lateral view (Fig. 3) *furcata* (Champion)
- 4'. Dorsum densely clothed with fine, stiff, erect setae; lateral margins of pronotum feebly rounded; pronotum weakly gibbose in lateral view (Fig. 4) *wickhami* (Horn)
- 5(1'). Each elytron with 2 carinae, a marginal one and a divergent discal one which usually joins the marginal near elytral base (Fig. 5) *confluens* (LeConte)
- 5'. Each elytron with 4 carinae, a marginal one, an outer discal one which joins the marginal behind elytral base, and 2 independent parallel inner discal carinae (Fig. 6) *semilaevis* (Horn)

In studying specimens for this review we encountered a series of specimens from northern Arizona which appeared distinct from any known species of *Asidina*. Careful study convinced us that this was a new species, allied to *A. parallela*.

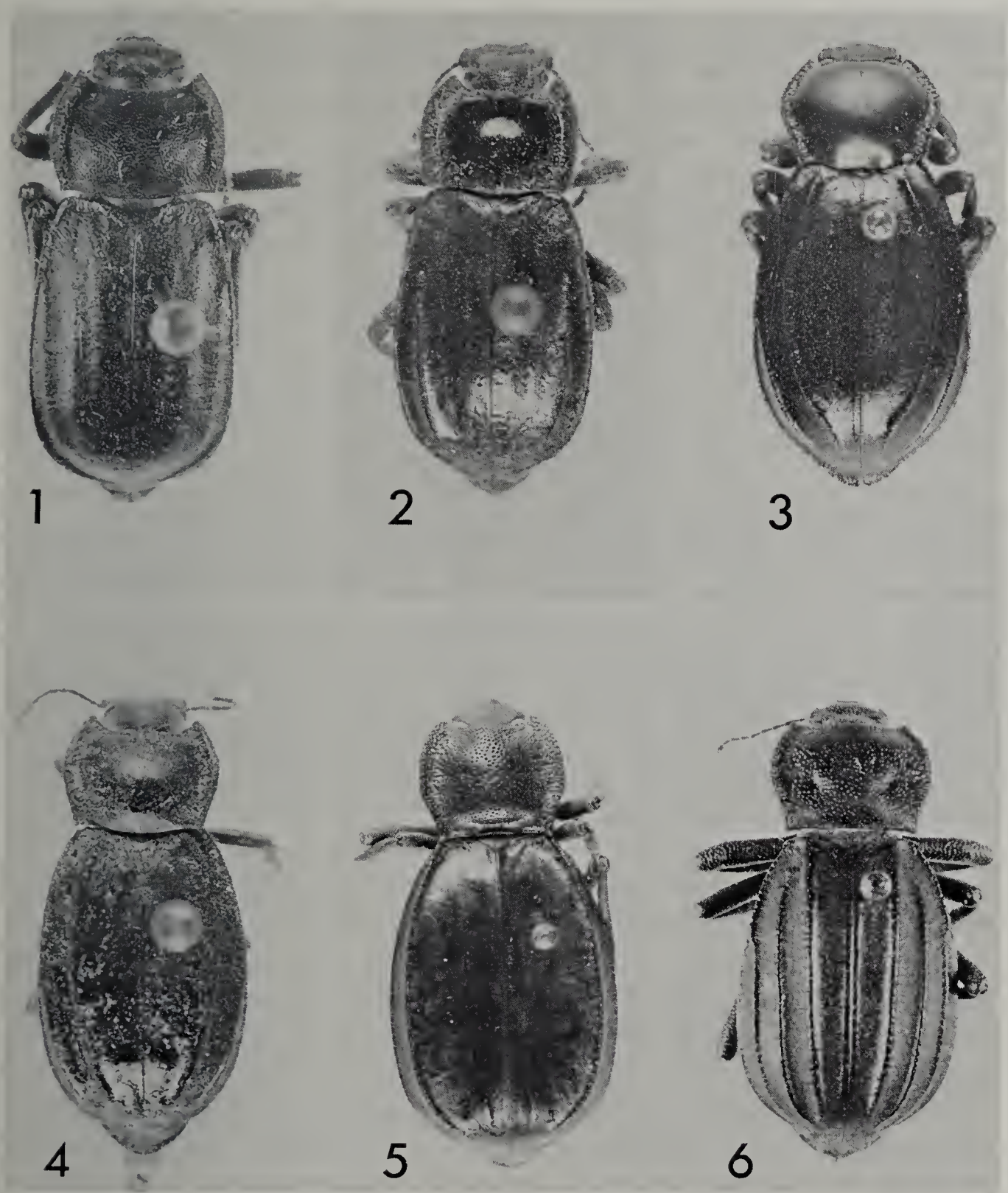


Fig. 1-6. *United States Species of Asidina*: 1. *A. rugicollis* ♂ Paratype, S. Rim, Grand Canyon, Arizona, 19-VII-68, C.A., W.E., & B. W. Triplehorn. Actual Length: 13.6 mm. 2. *A. parallela* ♀, Maricopa Co., Ariz., S. Mt. Pk. 10-X-65, S. C. Williams. Actual length: 14.6mm. 3. *A. furcata* ♀, Big Bend Nat. Pk., Texas, Santa Elena Canyon, 3-IX-68, J. A. Brubaker and F. J. Moore. Actual length: 19.5mm. 4. *A. wickhami* ♀, Maricopa Co., Ariz., S. Mt. Pk., 12-IX-65, S. C. Williams. Actual length: 15.3 mm. 5. *A. confluens* ♀, Borego, San Diego Co., Calif., 4-8-50, W. F. Barr. Actual length: 26.4 mm. 6. *A. semilaevis* ♂, Scottsdale, Ariz., 30-IX-66, P. Pinter. Actual length: 23.1 mm.

Asidina rugicollis Triplehorn & Brown, NEW SPECIES.

(Fig. 1, 7)

HOLOTYPE, MALE: oblong, dark purplish-black, inconspicuously setose, surface dully shining. **HEAD** coarsely and confluent punctured, transversely impressed near epistoma. Eyes weakly emarginate anteriorly. Antennae slender, sparsely clothed with stiff, golden-orange setae. Apical segment of maxillary palpi rectitriangular, distal edge more than one-fourth longer than proximal edge (Fig. 7A).

PRONOTUM subquadrate, convex, lateral margins moderately reflexed, uniformly arcuate viewed from above, widest at middle; disk uniformly, coarsely and densely punctured, the punctures separated by a distance subequal to their diameter, each puncture bearing a short, thick, golden-orange seta; punctures laterally becoming larger, deeper, and confluent, becoming rugose and irregular inside reflexed area; acies wrinkled, studded with numerous short, thick setae; apical angles acute and weakly everted; basal angles obtuse; base weakly bisinuate; ventral surface uniformly coarsely and confluent punctured.

ELYTRA: elongate oval, widest slightly anterior to middle, subparallel about one-fourth of length, declivous in posterior one-fourth, convex between lateral carinae; base slightly narrower than width of pronotum at basal angles; scutellum equilateral; disk and sides sprinkled with small granules, each bearing a short, golden-orange seta; each elytron with a strong lateral carina, almost, but not quite attaining the apex; outer discal carina not sharply defined, joining lateral carina at the basal one fourth, diverging gradually from lateral carina, becoming weaker posteriorly and disappearing about half way down the apical declivity, a row of closely-spaced tubercles (slightly larger than discal ones) along the crest; middle and inner discal carinae both visible, parallel to suture, but very weak, shallowly and broadly convex; suture flat on disk, becoming slightly elevated on declivity toward apex; epipleura narrow, epipleural fold weakly convex on anterior three-fourths, becoming sharply carinate on apical fourth.

LEGS, especially tibiae, with stiff golden setae; femora rugose; tibiae tuberculato-rugose; dorsal apical angle of protibiae moderately everted and acutely spiniform. Prosternal process moderately concave between coxae, smoothly declivous behind, with thin lobe barely contacting mesosternum.

ABDOMEN: asperate, each asperity bearing a thin, decumbent golden seta. Length: 11.4mm; width of pronotum: 4.2mm; width of elytra: 5.1mm.

ALLOTYPE, FEMALE: Similar to holotype. Body larger. Apical segment of maxillary palpi rectitriangular, distal edge less than one sixth longer than proximal edge (Fig. 7B). Elytra slightly more convex between lateral carinae; discal carinae more evident, the outer particularly more pronounced. Length: 14.2mm; width of pronotum: 5.0mm; width of elytra: 6.4mm.

HOLOTYPE AND ALLOTYPE: U. S. A., ARIZONA, COCONINO Co., Grand Canyon National Park, South Rim, 19-VII-68, W. E., C. A., and B. W. Triplehorn [Ohio State University Collection of Insects and Spiders].

PARATYPES: 33 specimens, all from ARIZONA: Coconino Co.: same data as holotype, 3 males, 2 females [OSUC]; 3 males, 3 females [KWBC]; 1 male,

1 female [USNM]; Grand Canyon, 26-27-VII-26, E. C. Van Dyke, 3 males, 5 females, [CASC]; 1 male, 1 female [ASUT]; 1 male, 1 female [BMNH]; 1 male, 1 female [MHNP]; Flagstaff, 1-VIII-33, K. Maehler, 1 male [CISC]; Flagstaff, 30-VII-38, D. J. & J. N. Knull, 1 male [OSUC]; Flagstaff, 29-VII-54, H. E. Cott, 1 male [UCDC]; northwest slope of Kaibab Plateau, 3-IX-26, 6700', R. & H., 1 female [ANSP]. Navajo Co.: Kayenta, 27-VII-33, K. Maehler, 1 male [CISC]. Yavapai Co.: Prescott, 13-VIII-37, H. M. Harris, 1 male [ISUI].

REMARKS: This species appears to be closely related to *Asidina parallela* (LeConte). It is distinguished from it by the coarsely punctate pronotum, acute and slightly everted apical angles of pronotum, convex elytra, weak outer discal carina which joins lateral carina toward elytral base, more visible middle and inner discal carinae, and smaller average size.

Geographically the known range of *A. rugicollis* is limited to northern Arizona. It is isolated from *A. parallela* except for one very old specimen of *parallela* labeled "Gd. Canyon, Ari., May". It overlaps *A. wickhami* in the southern part of its range but is easily distinguished from it by the coarsely punctate and much flatter pronotum, smaller size, and greater convexity of the elytral disc between marginal carinae.

It also superficially resembles the *Stethasida muricatula* group and *Trichiasida impotens* Casey. However close examination will quickly reveal the generic differences.

There is some variation among the specimens of *A. rugicollis* on hand. The lateral margins of the pronotum are sometimes so weakly reflexed as to appear almost flat. Overall the margins are less reflexed than in *parallela*. The strength of the discal carinae is variable. They are always weak, and the outer discal carina is sometimes almost obsolete and indicated only by tubercles. The surface luster of the elytra varies from frosty to completely dull.

Gross measurements of the specimens vary within a fairly narrow range. Although males and females appear similar superficially, sexual dimorphism is clearly evident in the measurements. The females are larger, relatively broader, and with a slightly larger ratio of elytral width to thoracic width (Table 1). The sexual dimorphism of the maxillary palpi is also not very obvious upon visual examination, but a graph of measurements shows complete separation between the sexes (Fig. 7C). This dimorphism is similar in magnitude to the other species of *Asidina*.

TABLE 1. SELECTED MEASUREMENTS OF *Asidina rugicollis* (MEANS AND RANGES).

Measurement	Males, n=18	Females, n=15
Total length	11.9mm (11.1-13.0)	13.2mm (11.5-14.5)
Thorax width	4.3mm (3.9-4.8)	5.0mm (4.4-5.3)
Elytra width	5.3mm (4.5-5.8)	6.4mm (5.7-6.9)
<u>Elytral length</u>		
<u>Elytral width</u>	2.3	2.1
<u>Elytral width</u>		
<u>Thoracic width</u>	1.2	1.3

Asidina parallela (LeConte 1851: 128)

(Fig. 2)

From November, 1964 to December, 1965, Stanley C. Williams conducted ecological studies utilizing pitfall traps in South Mountain Park, near Phoenix, Arizona. In the process of identifying the Tenebrionidae, Triplehorn determined 1,513 specimens as *Asidina teres* Casey, 54 as *A. liberta* Casey, and 4 as *A. wickhami* (Horn), but with reservations regarding the status of Casey's species. Until this time we had considered all species of *Asidina* as rare and, indeed, they remain so in most collections. Preliminary determinations were made using Casey's 1912 revision as the primary reference.

Recently Triplehorn (July, 1969) and Brown (December, 1967) had the opportunity to study the Casey types of *A. teres* (USNM #46535) and *A. liberta* (USNM #46534), LeConte's types of *A. parallela* (MCZ #4535) and *A. confluens* (MCZ #4534), and Horn's types of *A. wickhami* (ANSP #3932) and *A. semilaevis* (ANSP #3931). With only 6 specimens when he described *Asidina* and the 2 new species, Casey had no notion of the variation which occurs in any of the species. The suspicions we both held regarding the status of Casey's species were confirmed.

We are placing *Asidina teres* Casey as a synonym of *A. parallela* (LeConte). Casey's unique type labelled "Ari." is narrower, shorter, and shinier and has less evident setae than LeConte's unique type specimen. However these differences fall well within the range of variation observed in the large series from South Mountain Park.

The variability in surface luster of *A. parallela* is rather striking. Some specimens are quite dull and often coated with dust and dirt, while others appear highly polished. Closer examination of Arizona specimens revealed that the dull appearance is caused by a waxy layer to which dirt adheres. This layer can be rubbed off, revealing a shiny surface. However most California specimens are not shiny but show a frosty, minutely rugulose surface, and weak granules on the pronotum rather than minute punctae. Too few specimens from California are available to determine the consistency of these differences, and we believe it is best to consider *A. teres* (type from Arizona) as a synonym of *A. parallela* (type from California).

Gebien (1910) proposed *neglecta* as a new name to replace *parallela*. At that time the species now in *Asidina* were in the genus *Asida* Latreille. Solier (1836) had described an *Asida parallela* from Spain. Therefore *Asida parallela* (LeConte) was a junior homonym and Gebien rightly chose a new name. By the time Gebien prepared his new catalogue (1937), Casey (1912) had broken the North American components of *Asida* into a number of new genera, and had placed *parallela* (LeConte) into his new genus *Asidina*. Therefore the homonymy no longer existed, and Gebien himself placed *neglecta* into synonymy with *parallela* (LeConte).

Blaisdell (1923: 254) described a new "variety" of *parallela* from Guaymas, Sonora, Mexico, under the name *terricola*. Since he listed it as a trinomial, the International Rules provide that it must be considered a subspecies until determined otherwise. We have on hand 3 specimens of *Asidina parallela* recently collected in Guaymas which fit within the variation range of *parallela*. Although they do not precisely fit Blaisdell's description, we do not believe that *terricola* can be recognized as a distinct

entity and hereby synonymize it under *parallela* (LeC.). An additional specimen mentioned by Blaisdell (1923) from Santa Inez Island is rather distinct from anything we consider *A. parallela*, and it is probably an undescribed species.

Other than the enormous series from South Mountain Park, records for *parallela* are scarce. We have seen 55 specimens from the following localities: ARIZONA: Cochise Co.: Benson. Coconino Co.: Grand Canyon. Greenlee Co.: no locality specified. Maricopa Co.: Lake Pleasant; Mesa; Paradise Valley; Phoenix; Scottsdale; Tempe. Pima Co.: Agua Dulce Mts.; Covered Wells, Organ Pipe National Monument; Quitobaquito; Tucson. Pinal Co.: Apache Junction; 25 mi. SSE Casa Grande; Sierra Estrella. County not known: Beeline, Rolito, Userly Pass. CALIFORNIA: Riverside Co.: Palm Canyon near Palm Springs. San Diego Co.: Mason Valley; Palm Canyon in Borrego State Park; Scissors Crossing; Sentenac Canyon. MEXICO: Sonora: Bahia Kino; Guaymas. Measurements: length: 10.5-16.2mm; width: 4.4-7.4mm.

The only specimens from Mexico considered to be *parallela* are those from Sonora State (Bahia Kino and Guaymas). Several other specimens are on hand from Baja California and islands in the Gulf of California, including ones reported by Blaisdell (1923:253) from Isla Partida which resemble *parallela*, but show a striking amount of divergence from that species. Specimens from different islands even show recognizable divergence from each other. In addition we have studied specimens which clearly cannot be attributed to any known species of *Asidina*. Since at present we cannot satisfactorily establish the identity of specimens from this region, we must exclude them from our discussion.

Asidina wickhami (Horn 1894:499)

(Fig. 4, 8)

Casey's unique type specimen of *Asidina liberta* (Tempe Desert, Arizona) has the marginal carina of the elytra dividing well behind the first abdominal suture but not as far back as the second (at about $\frac{2}{3}$ the length of the elytra) while Horn's type (Riverside, Arizona) of *wickhami* has the carina dividing opposite the first abdominal suture (at slightly more than $\frac{1}{2}$ the length of the elytra). The pronotum of the *liberta* type is more convex from front to back, and the dorsal surfaces of the pronotum and elytra bear fewer and more inconspicuous setae resulting in a more shiny appearance. Also the sides of the body are narrower and more parallel than in Horn's type of *wickhami*.

All of these differences disappear when a large series is studied. The point where the marginal elytral carina divides is particularly variable and this is why both *wickhami* and *liberta* were originally recognized by Triplehorn in the South Mountain Park series. There appears to be an overall shift in position of the bifurcation in specimens from southern to northern parts of the range. The point of bifurcation tends to be closer to the first abdominal suture in southern specimens (Fig. 8D, E) shifting toward the second abdominal suture in the northern part of the range (Fig. 8B, C). The distinctness of the inner branch is also quite variable. The extreme is reached by some specimens from the Hualapai Mountains, Valentine, Kingman, Peach Springs and Williams areas where the inner branch totally disappears (Fig. 8A). These aberrant specimens cannot be confused with *parallela* which is characterized by an unforked marginal costa, as the

inner (discal) costa almost attains the elytral base and turns sharply inward, while the discal costa in *parallela* does not come near the elytral base and turns slightly outward. *Asidina liberta* Casey is without question a synonym of *A. wickhami* (Horn).

Records for *wickhami* are equally as scarce as for *parallela*. In addition to the 58 from South Mountain Park, we can report it from the following localities, all in ARIZONA (62 specimens): Coconino Co.: Bill Williams Fork. Gila Co.: Payson; Pinal Mts.; Riverside. Maricopa Co.: Mesa; Phoenix; Sunflower; Tempe; Wickenburg. Mohave Co.: Hualapai Mts.; Kingman; Peach Springs; Valentine. Pima Co.: Sabino Canyon; Santa Catalina Mts.; Tucson; Tucson Mts. Pinal Co.: Sacaton. Yavapai Co.: Mayer. Measurements: length: 11.6-16.5mm; width: 5.1-7.4mm.

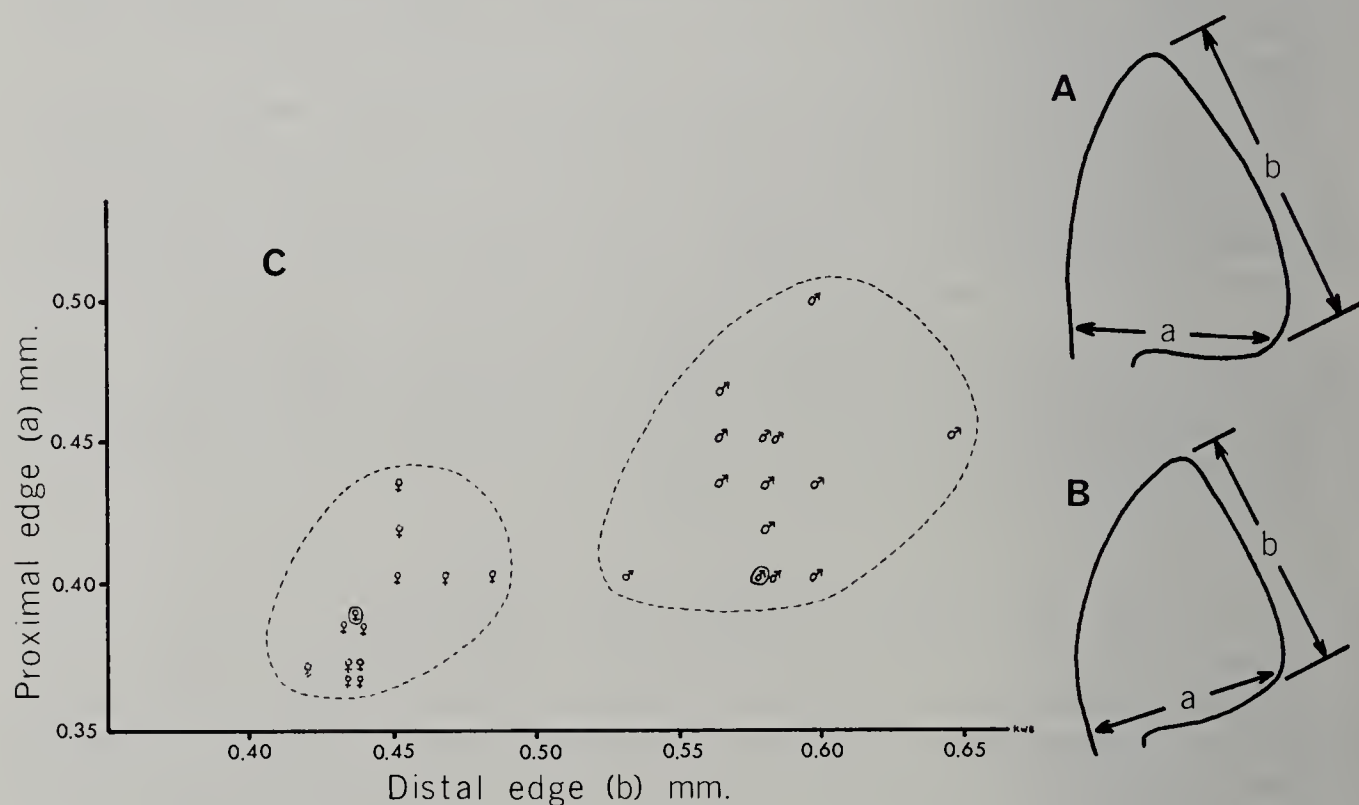


Fig. 7: *Asidina rugicollis* n. sp. A. Apical segment of maxillary palpus of holotype male; B. Same, allotype female; C. Graph of measurements of maxillary palpi of 14 males and 13 females (holotype and allotype circled).

At South Mountain Park, *A. parallela* was taken from September to May and was especially abundant in November and December. Records from other localities show the same pattern. *A. wickhami*, on the other hand, was taken from July to November, and was more abundant in July and August. Records from other localities begin in June, with most specimens being collected in August. *A. rugicollis* records include only late July and early August.

Asidina furcata (Champion 1892:499)
(Fig. 3, 9)

Champion (1892) described *Asida furcata* from a single specimen taken at Villa Lerdo in Durango, Mexico. Casey (1912:172) assigned this species to his genus *Asidina* although it is doubtful that he ever saw a specimen. Probably he inferred the relationship from Champion's very lucid description and excellent illustration (Champion 1892: plate 22, Fig. 15). Pallister (1954:26) reported 2 specimens collected in Coahuila State,

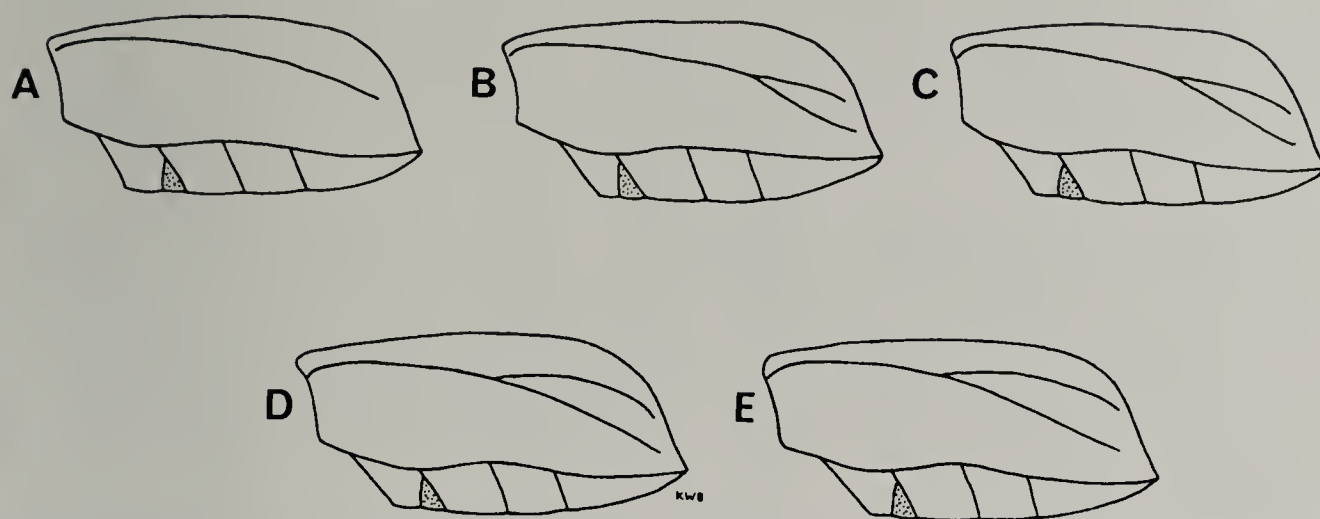


Fig. 8: *Asidina wickhami* (Horn), lateral view of elytra showing variation in bifurcation of marginal carina. ARIZONA: A. Valentine; B. Hualapai Mts. near Kingman; C. Tempe (Type of *A. liberta*); D. Riverside, Pinal Mts. (Type of *A. wickhami*); E. Pinal Mts.

Mexico by the Rockefeller Expedition; one from Cabos, and the other from 5 miles north of Saltillo. Both are within 200 miles of the type locality.

Frank J. Moore and John A. Brubaker collected 7 specimens of a species of *Asidina* unknown to us, but which fitted Champion's description of *A. furcata* perfectly. They were found on the rock walls of Santa Elena Canyon, Big Bend National Park, Brewster County, Texas, on 13 September, 1968 at night. Richard L. Berry and Frank J. Moore collected 2 more in the same location on 4 May, 1969. In gleaning through collections

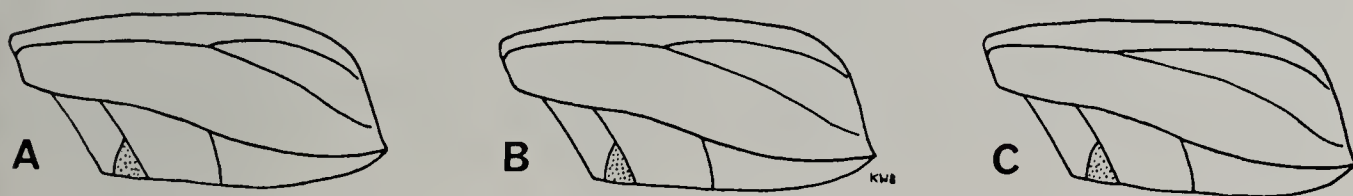


Fig. 9: *Asidina furcata* (Champion), lateral view of elytra showing variation in bifurcation of marginal carina. A. Saltillo, Mexico and Big Bend, Texas; B. Big Bend, Texas; C. Villa Lerdo, Durango, Mexico (Type).

we discovered an additional 40 specimens which appeared to be *A. furcata*; 38 from Texas and 2 from Mexico.

Since *A. furcata* is unrecorded from the United States, and we had not seen reliably determined specimens, we submitted specimens for comparison with the type in the British Museum (Natural History). Our tentative identification was confirmed by C. M. F. von Hayek who informed us that the type is evidently immature, but that our specimens appeared to agree with it except in regard to the bifurcation of the marginal carina of the elytra. This established Casey's placement of *A. furcata* in *Asidina* as correct. Brown examined the Rockefeller specimens and confirmed the accuracy of Pallister's determinations.

In the type specimen of *A. furcata* the marginal carina divides just posterior to the hind coxal cavities as viewed laterally (Fig. 9C). In 6 of the specimens from Big Bend, the marginal carina divides opposite the first abdominal suture behind the hind coxal cavities (Fig. 9A). A similar

bifurcation occurs in 2 specimens seen from the Saltillo area in Mexico. In the other Big Bend specimens, Cochran Ranch specimen, and Edinburg specimen, the bifurcation is intermediate in position (Fig. 9B). In the 30 remaining specimens from Texas, and 1 from near Torreon, Mexico, the bifurcation occurs just behind the hind coxal cavities as in the type specimen.

There is also variation in sculpture. The specimens from Big Bend, Edinburg, and Saltillo are smoother with smaller and sparser microtubercles on the elytra, and the pronotum is more finely and sparsely punctured than the other specimens studied. This variation closely follows the pattern of bifurcation of the marginal costa. These appear to be cases of localized geographic variation, and we feel that all the specimens studied are conspecific with the type.

Seven of the Big Bend specimens mentioned above are deposited in [OSUC]; the other 2 are in the personal collection of R. L. Berry. We can also report the following records for the species, a total of 40 specimens. All are single specimens unless otherwise indicated: TEXAS: Terrell Co.: 16 mi. N of Dryden, Route 349, 2-VII-59, George E. Ball family; Cochran Ranch, Sanderson, 2-VII-59, George E. Ball family [UASM]. Brewster Co.: 74 mi. SE of Marathon, 20-VI-66, J. S. Buckett, M. R. and R. C. Gardner [UCDC]; Big Bend Nat. Park, Boquillas Cn., 28-30-VII-55, E. G. Matthews [CUIC]; Big Bend Nat. Park, Boquillas, 1850', 17-24-V-59, Howden and Becker (3); Big Bend Nat. Park, 5 mi. N of Glenn Springs, 3000', 24-V-59, Howden and Becker [CNCI]. Val Verde Co.: Pecos River Bridge on U.S. 90, 8-X-58, H. V. Weems, Jr. [FSCA]; same locality, 2-IX-68, F. J. Moore & J. A. Brubaker [OSUC]; Comstock, 26-V-52, M. Cazier, W. Gertsch, R. Schrammel (21) [AMNH]; Del Rio. 25-26-IV-59, Becker and Howden [CNCI]; Langtry, 19-III-60, W. Gertsch and R. Schrammel (2); Shumla, 26-V-52, M. Cazier, W. Gertsch and R. Schrammel (2) [AMNH]. Upton Co.: McCamey, 4-VIII-31, H. M. Smith [KSUC]. Hidalgo Co.: Edinburg, S. Mulaik [AMNH]. MEXICO: Coahuila State: 19 mi. W of Saltillo, 27-29-VIII-46, C. M. Bogert [AMNH]. Durango State: 40 mi. S of Torreon, 18-VII-61, D. H. Jansen [CISC]. Measurements (all 49 specimens): length: 13.5-18.7mm; width: 6.4-9.5mm.

Asidina confluens (LeConte 1851:128)

(Fig. 5, 10)

Casey (1912:172) confessed that he was unfamiliar with the species described by LeConte as *Pelecyporus confluens* and somewhat reluctantly assigned it to *Asidina*, pointing out the aberrant size and sculpture. This species is larger, with smoother elytra but more coarsely punctate pronotum than the other species known to Casey. Other characters not typical of the previously discussed species of *Asidina* are the arcuate to truncate rather than bisinuate thoracic base, the thick thoracic margins, and the almost complete lack of setae on the dorsal surface. However it conforms reasonably well in such characters as form of the mentum, ligula, maxillary palpi, pro-tibiae, and arrangement of carinae. Under the present concept of *Asidina*, it seems that *A. confluens* was correctly placed in that genus by Casey.

Although not abundant, the species is found throughout the Mohave desert of California, spreading into Mexico and Arizona. Its preferred habitat seems to be sand dunes, and the beetles can be found wandering about at dusk when the temperature has fallen. Collecting dates range from August to April, but specimens collected from January to April appear to have been already dead when found. Peak occurrence is from September

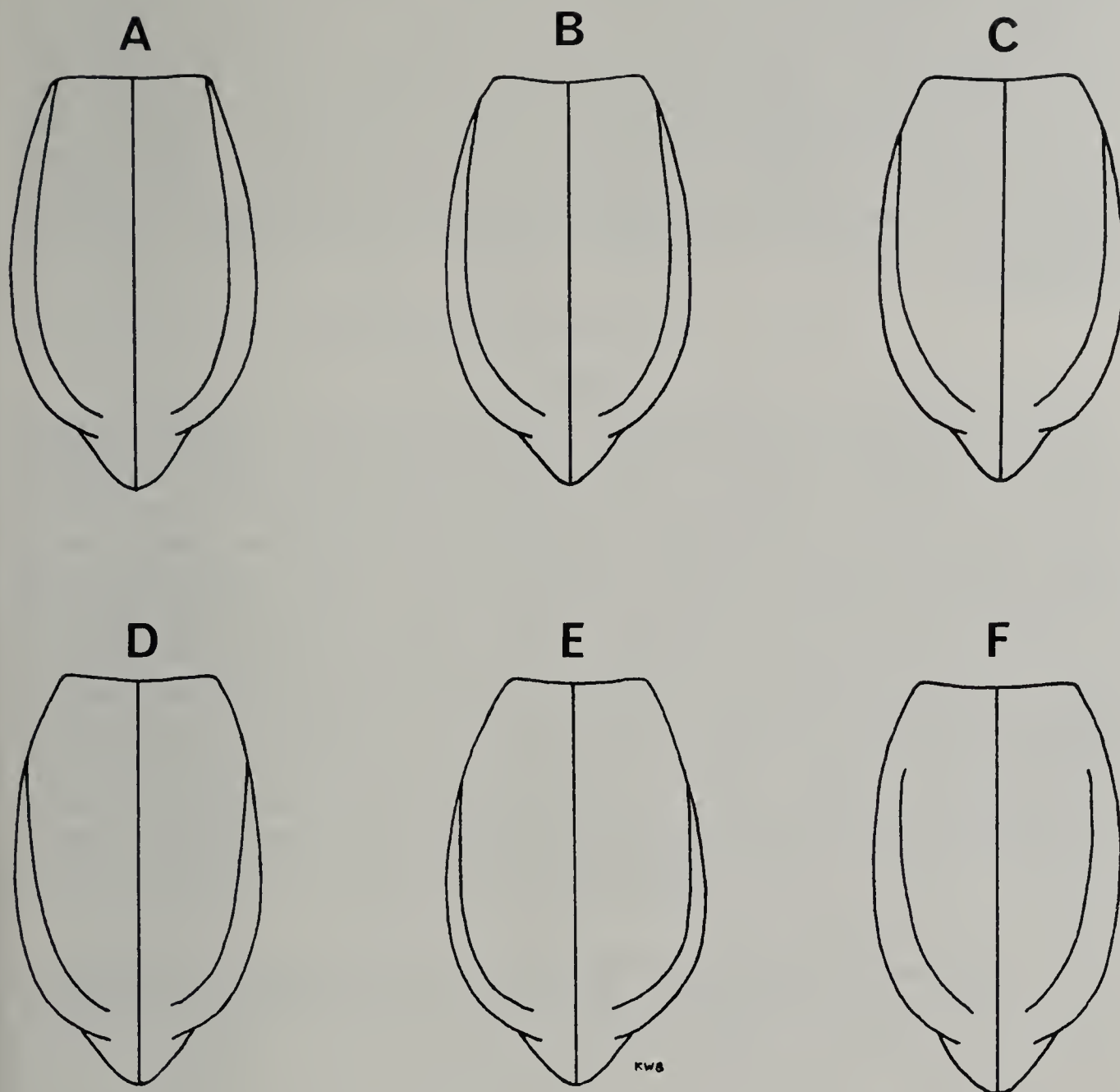


Fig. 10: *Asidina confluens* (LeConte), dorsal view of elytra showing variation in junction of discal carina with marginal carina. A. Twenty-nine Palms, California; B. Blythe, California; C. Borrego Springs, California (similar to type); D. Patagonia, Arizona; E. Puerto Peñasco, Sonora, Mexico; F. Desemboque, Sonora, Mexico.

to November. Superficially *A. confluens* resembles *Philolithus carinatus* (LeConte) with which its range overlaps, but in fact they belong in rather distinct branches of the tribe Asidini.

A. confluens shows a high degree of variability in expression of the inner elytral carina. In the California specimens this inner carina tends to join the marginal carina at or near the elytral base (Fig. 10A,B,C). In Arizona specimens the junction is farther back, almost in line with the hind coxae (Fig. 10D). Baja California specimens are intermediate, while some from Sonora are extreme with the junction behind the hind coxae (Fig. 10E), or the inner carina not joining the marginal carina at all (Fig. 10F). This variability seems equivalent to that reported in *A. furcata* and *A. wickhami*.

We can report the following records for this species (129 specimens): ARIZONA; Maricopa Co.: Gila Bend; Phoenix. Pima Co.: Ajo; 21 mi. N of Quijota; Tucson. Santa Cruz Co.: Patagonia. CALIFORNIA: Imperial Co.: Bard; Coyote Wells; El Centro; Glamis; 8 mi. N of Glamis; Holtville; SE of Niland; Palo Verde. Riverside Co.: Blythe; 18 mi. W. of Blythe; 25 mi. W of Blythe; Cathedral City; Hopkins Well; Indio; Palm Springs, 18 mi. S of Palm Springs; Thermal; 4 mi. E of Thousand Palms. San Bernardino Co.: Cronise Valley Dunes; Dale Dry Lake; Kelso Dunes; Needles, Twentynine Palms; 6 mi. E of Twentynine Palms. MEXICO: Baja California: 3 mi. S of San Felipe; 20 mi. S of San Palano. Sonora: Cholla Bay; Desemboque; Estero de Sargente; Puerto Peñasco; 55 mi. W. of Sonoyta.

Asidina semilaevis (Horn 1870:284)

(Fig. 6)

This species, recently transferred from *Pelecyphorus* to *Asidina* (Brown 1971), is about the same size and similar in appearance to *A. confluens*. *A. semilaevis* differs in having 2 additional carinae on each elytron, and a differently shaped pronotum with a weakly tri-sinuate base. The arrangement of discal carinae is similar to *A. rugicollis* n. sp. *A. confluens* and *semilaevis* form an aberrant branch of the genus *Asidina*. In looking at their morphology and geographical distribution, one is led to the speculation that they derived from a common ancestral species which became split geographically into 2 groups which evolved after isolation into *confluens* centered in the Mohave Desert of California, and *semilaevis* centered in southern Nevada. Hundreds of specimens have been collected in the region of Rock Valley near Mercury, Nevada at the Nuclear Test Site in intensive ecological studies (Tanner and Packham, 1962, 1965). Outside this area, records are exceedingly rare.

We can report only 12 specimens. All are single records unless otherwise noted: ARIZONA: Coconino Co.: Bill Williams Fork, VIII (2) [SEMC]; Flagstaff, 30-IX-53, B. Malkin [FMNH]. Maricopa Co.: Scottsdale, 30-IX-66, P. Pinter [ASUT]. Pima Co.: Tortilla Mts., 12 mi. N Tucson, VII-66 [W. Rosenberg]. Yavapai Co.: Congress Junction, VII [SEMC]. Yuma Co.: Alamo Crossing, IX [UAIC]; Kofa Mts., X [LACM]. CALIFORNIA: Riverside Co.: Blythe, VIII [CUIC]. NEVADA: Clark Co.: Las Vegas, IX [CUIC]; 3 mi. S Las Vegas, 1-IX-64, C. D. Johnson [NAUF]. Nye Co.: 2.9 mi. NW Lathrop Wells, 2650', 3-IX-65, K. W. Brown [KWBC].

CHECK LIST OF THE GENUS *Asidina* CASEY

Asidina parallela (LeConte 1851:128). Type Species. California, Arizona, Mexico.

=*neglecta* (Gebien 1910:134)

=*teres* Casey, 1912:171 NEW SYNONYMY

=*terricola* Blaisdell, 1923:254 NEW SYNONYMY

Asidina rugicollis Triplehorn & Brown NEW SPECIES. Arizona.

Asidina wickhami (Horn 1894:420). Arizona.

=*liberta* Casey 1912:171 NEW SYNONYMY

Asidina furcata (Champion 1892:499). Texas, Mexico.

Asidina confluens (LeConte 1851:128). California, Arizona, Mexico.

Asidina semilaevis (Horn 1870:284). Nevada, Arizona, California.

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American Museum of Natural History, New York [AMNH]; Arizona State University, Tempe [ASUT]; British Museum (Natural History), London [BMNH]; California Academy of Sciences, San Francisco [CASC]; California Insect Survey, Berkeley [CISC]; Canadian National Collection of Insects, Ottawa [CNCI]; Cornell University, Ithaca, New York [CUIC]; Field Museum of Natural History, Chicago [FMNH]; Florida State Collection of Arthropods [FSCA]; Iowa State University, Ames [ISUI]; Kansas State University, Manhattan [KSUC]; Kirby W. Brown, personal collection [KWBC]; Los Angeles County Museum of Natural History, Los Angeles, California [LACM]; Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts [MCZC]; Muséum National d'Histoire Naturelle, Paris [MNHN]; Northern Arizona University, Flagstaff [NAUF]; The Ohio State University Collection of Insects and Spiders, Columbus [OSUC]; William Rosenberg, personal collection; University of Alberta, Edmonton [UASM]; University of Arizona, Tucson [UAIC]; University of California, Davis [UCDC]; Snow Entomological Museum, University of Kansas, Lawrence [SEMC]; United States National Museum of Natural History, Washington, D. C. [USNM].

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THE GENUS *RHAGONYCHA* ESCHSCHOLTZ IN NORTH AMERICA¹ (COLEOPTERA: CANTHARIDAE)

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ABSTRACT

The name *Rhagonycha* has been used as a full genus by most Europeans, although considered as a subgenus of *Cantharis* by North American workers. It is here considered a valid genus, and the 43 North American species are listed along with their synonyms.

The genus *Rhagonycha* Eschscholtz has been recognized as a genus distinct from *Cantharis* by European coleopterists for many years. Its recognition in this country has been, at best, as a subgenus of *Cantharis* by McKey-Fender (1950), who at the time acknowledged that it might properly be considered a distinct genus. Prior to this Green (1940), in a revision of the group, indicated that a division of *Cantharis* should be studied. Neither Green nor McKey-Fender pursued the matter further. W. Wittmer, Basel, Switzerland, (in correspondence) expressed his regrets that they did not see fit to so do. Wittmer agrees with me that the group studied by Green should be assigned to the genus *Rhagonycha*. Also included should be 3 species ascribed to *Cantharis* by Miskimen (1956).

The North American species of *Rhagonycha* are small (7.5mm or less long) and monotonously similar in structure and appearance. The third tarsal segment is simple with the insertion of the fourth segment apical. In other members of the old genus *Cantharis*, the third tarsal segment is apically emarginate with the insertion of the fourth segment ante-apical.

Green has seen specimens of *Rhagonycha fulva* Scopoli labeled "Tex", but he was suspicious of the records. He felt that these should be confirmed by recent collections before the species was added to our lists. To date, no additional specimens have been seen from North America. For these reasons, *Rhagonycha fulva* is for the present omitted.

The following list and synonymy of the North American species of *Rhagonycha* is taken from Green's study with the addition of the 3 species more recently described by Miskimen. The synonyms are indented.

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